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Komparasi Pemodelan Data Menggunakan Support Vector Machine dan Neural Network Untuk Prediksi Ketepatan Waktu Kelulusan Mahasiswa

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ABSTRAK

Kelulusan mahasiswa merupakan masalah penting dalam suatu lembaga pendidikan karena mempengaruhi pandangan publik terhadap kredibilitas suatu instansi pendidikan. Selain itu kelulusan mahasiswa dianggap sebagai indikator keberhasilan perguruan tinggi baik negeri atau swasta. Penelitian untuk memprediksi kelulusan mahasiswa dengan teknik data mining telah banyak dilakukan dan menunjukkan bahwa Neural Network memiliki akurasi lebih baik dibanding Naïve Bayes dan C4.5. Namun Neural Network mempunyai kelemahan terutama karena solusi yang dihasilkan bersifat local optimum. Metode prediksi lain yang bisa mengatasi kelemahan Neural Network salah satunya yaitu Support Vector Machine yang mampu memberikan solusi secara global optimum. Penelitian ini membandingkan antara Support Vector Machine dan Neural Network untuk menyelesaikan masalah prediksi kelulusan mahasiswa. Desain penelitian menggunakan model proses CRISP-DM yang merupakan standart proses dalam penelitian data mining. Proses validasi menggunakan tenfold-cross validation, sedangkan pengujian modelnya menggunakan confusion matrix dan kurva ROC. Hasil pengujian menunjukkan Support Vector Machine memiliki akurasi sebesar 81.17% dan nilai AUC 0.882 sedangkan Neural Network memiliki akurasi sebesar 78.83% dan nilai AUC sebesar 0.858.

Kata Kunci : Kelulusan mahasiswa, data mining, teknik prediksi, Support Vector Machine, Neural Network

Comparison of Data Modeling Using Support Vector Machine and Neural Network For Prediction of Student Graduation Time

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ABSTRACT

The graduation of students is an important issue in an institution because it affects the public view of the credibility of an educational institution. Besides the graduation students are regarded as an indicator of the success of the College both public or private. Research for predicting graduation students with techniques of data mining has been widely performed and indicates that the Neural Network has accuracy better than Naive Bayes and C 4.5. But the Neural Network has a weakness mainly because of the resulting solution is a local optimum. Other prediction methods that could address the Neural Network is one that Support Vector Machine that is able to provide optimum solutions globally. This study compares between Support Vector Machine and Neural Network to solve the problem of prediction of graduation students. Design research process model using CRISP-DM which is a standard process in research on data mining. The validation process using tenfold cross-validation, while testing his model using the confusion matrix and ROC curves. The test results showed Support Vector Machine has an accuracy of 81.17% and AUC values of Neural Network while 0.882 have accuracy of 78.83% and AUC values of 0.858.

Keyword : Graduation, data mining, prediction, Support Vector Machine, Neural Network